

OPTICAL DEFLECTING ELEMENT

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Inventor(s): TANABE MASANORI; others: 03
Applicant(s): HITACHI SEISAKUSHO KK
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Abstract

PURPOSE: To make a two-dimensional deflection scan through one element by supporting a galvano mirror with a gimbals spring, and controlling the application of magnetic fields in two X and Y directions while flowing a current to the thin film coil on a mirror surface.

CONSTITUTION: A substrate 1 made of Si single crystal is worked into the gimbals spring by photoengraving. The gimbals spring 2 rotates and oscillates about an X-directional axis 5 and an Y-directional axis 6 independently. The galvano mirror 3 and thin film coil 4 are formed on the surface of the center movable part of the substrate 1 supported with the gimbals spring 2 by metal vapor deposition or plating. The constant current is supplied to the thin film coil 4 to vary a magnetic field 7 in the X direction and a magnetic field 8 in the Y direction independently of each other, and consequently the element rotates and oscillates about the axes 5 and 6 independently of each other with electromagnetic force, so that reflected light from the mirror 3 is deflected in two dimensions.

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